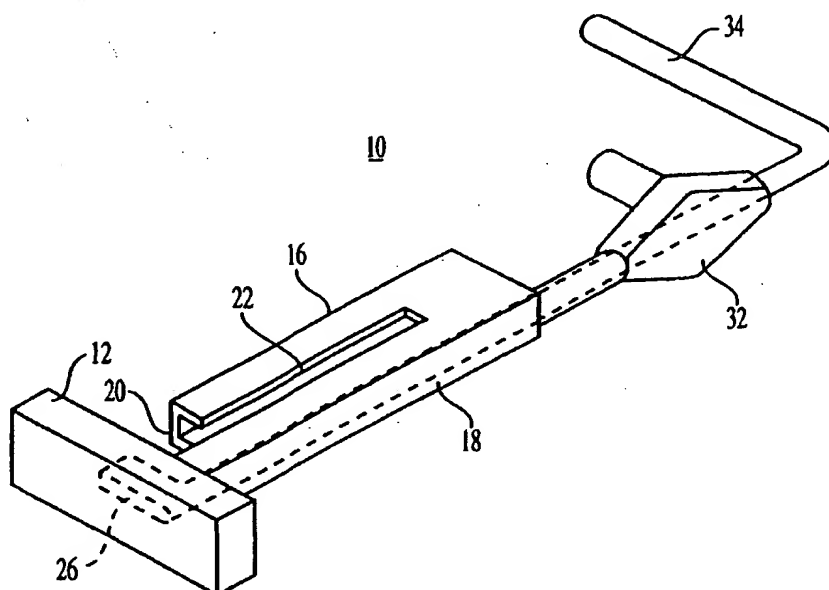




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: ANTI-THEFT BRAKE OR CLUTCH LOCKING DEVICE



## (57) Abstract

A device (10) for locking the brake or clutch of a vehicle and preventing its theft comprising: a base member (12) for a placement on the floorboard (35) of a vehicle beneath a brake pedal (13); a U-shaped housing (14) extending downward and having a first arm (18) attached to the base and having a second shorter arm (16) defining a gap (20) for receipt of a brake pedal shaft, said space between the first and second arms defining a slot (22) for receiving the brake pedal shaft (13) and permitting its full extension upward through said shaft; and locking means (32) associated with the second arm for locking the underside of the pedal within the slot (22) such that the brake pedal cannot be depressed.

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**ANTI-THEFT BRAKE OR CLUTCH LOCKING DEVICE****Claim of Priority**

This application is a continuation-in-part of U.S. Serial No. 09/004,666 entitled  
5 ANTI-THEFT BRAKE OR CLUTCH LOCKING DEVICE filed January 8, 1998 which is a  
continuation-in-part of co-pending U.S. Serial No. 08/949,009 entitled ANTI-THEFT  
BRAKE LOCKING DEVICE filed October 10, 1997.

**Field of the Invention**

This invention relates to an anti-theft brake or clutch locking device for vehicles,  
10 which is particularly suitable for both automatic and standard transmission vehicles. More  
particularly, this invention relates to a device which prevents the brake or clutch pedal from  
being depressed thereby rendering a vehicle inoperable.

**Background of the Invention**

Automotive theft is a major worldwide problem. The U.S. Federal Bureau of  
15 Investigation has reported that a car is stolen every 20 seconds.

The proliferation of mechanical type anti-theft devices for motor vehicles have  
resulted in the commercial availability of different types of anti-theft devices. One type of  
prior art system mechanically locks the brake and accelerator by means of two independent or  
articulated shoes which lock the pedals. The major problem stemming from the use of such  
20 devices is that the driver has to reach out for the pedal area or actually get down on his or her  
knees in order to operate the locking device, and the varying distance between the brake and  
accelerator which can prevent the device from being installed.

More recently, some devices have been suggested which are constructed from a long

rod consisting of an anti-picking material and which is provided at both ends with two shaped members that couple respectively with a pedal and with the steering wheel of the vehicle. The coupling with the steering wheel is locked using a safety lock that prevents the same from being disengaged. This device, which owing to its characteristics, can be employed on  
5 traditional transmission cars as well as on automatic transmission vehicles, is affected in the main by two drawbacks.

First, the connection, due to its longitudinal size and cumbersomeness is difficult to store when the device is not being utilized. Secondly, devices of this nature actually have a poor record against theft. Indeed, it is relatively easy to cut the rim of the steering wheel by means  
10 of a saw or the like. The rim of the steering wheel is usually not a viable obstacle for thieves, and the anti-theft device can be disengaged merely pulling apart the two ends of the rim. Such devices are also not usually adaptable for automatic transmission vehicles because of their structural characteristics.

In UK patent application No. 2,091,656, an anti-theft pedal-locking device for  
15 vehicles is described comprising a first supporting member extending upwards and provided with a safety lock and with a laterally projecting member, a second supporting member, upon which the first supporting member slides, with a projecting member cooperating with the corresponding member of the first supporting member so as to lock a pedal of the vehicle when the latter member is in its lower position, while the lower end of the second supporting  
20 member may carry a base member to rest on the floor of the vehicle.

A number of United States Patents have also issued on brake locking mechanisms. U.S. Patent No. 4,040,675 discloses a vehicle anti-theft device which maintains the braking function of the braking fluid by preventing reverse flow thereof from the wheel cylinder back

to the master cylinder until an authorized procedure permits said backflow.

U.S. Patent No. 4,493,198 discloses an anti-theft lock for a pedal operated apparatus. The invention incorporates first and second stop bodies which are arranged to clamp around the lever of a pedal. When the stop bodies are locked in place, the pedal cannot be operated  
5 unless the apparatus is restrained.

U.S. Patent No. 4,934,492 discloses an automatic brake-locking mechanism which locks the brake of a vehicle having a hydraulic brake system. The system incorporates a safety switch provided to operate in conjunction with the ignition switch so that the safety switch and the ignition both must be operated to an "on" position to release the auxiliary  
10 brake device to allow normal operation of the vehicle.

U.S. Patent No. 5,040,387 similarly discloses a vehicle brake lock assembly which engages a brake pedal and which includes a U-shaped end portion which engages the brake pedal telescopically to lock the brake pedal in position.

U.S. Patent No. 5,345,796 discloses a vehicle brake-pedal locking device which  
15 mechanically maintains the vehicle brake pedal in a depressed position to prevent the vehicle from being driven. The device includes a horizontally and vertically pivoting brake-pedal swing arm interfacing structure.

Finally, U.S. Patent No. 5,653,133 discloses an anti-theft device for vehicles having a steering wheel and a brake. The device comprises a brake guard moveably mounted to a  
20 fixed portion of the brake, a lower elongated member which hooks to the brake guard, an upper elongated member which is locked to the lower elongated member, a wide bar spaced a distance adaptable to be placed around the steering wheel and a locking bar and a claw member. When the device is secured with two padlocks, movement of the steering wheel and

the brake pedal is prevented.

All of the above devices are so called active devices which must be actively placed on a vehicle. Passive alarms have also recently gained popularity, but these devices are expensive and frequently activate when a vehicle is accidentally struck. In addition to above  
5 discussed devices and technologies, the prior art also includes complex tracking devices which send out signals to police if a vehicle is reported stolen. The search may take up to 24 hours or longer with no guarantee of recovery. Installation of these systems is expensive and require a monthly monitoring fee. Automotive alarms are similarly expensive and may be deactivated by car thieves.

10 While the prior art is replete with mechanisms and inventions for locking the brake pedals of a vehicle, there is no simple and easy system ever devised for swiftly securing the brake or clutch pedal in a non-depressible state without the driver or operator having to get down on his or her knees or crouch down. Such a system would be to disable a vehicle, because many automobiles built since 1990 cannot start and be placed into gear without the  
15 brake or clutch pedal being depressed.

The present invention is thus directed to a brake or clutch lock mechanism which does not require the driver or vehicle operator to get down on his knees or to move beneath the vehicle and which prevent the brake from being depressed. These and other objects of the present invention will be described with reference to the following summary and detailed  
20 description.

### **Summary of the Invention**

In accordance with the present invention, a device for locking the brake or clutch of a vehicle in an upward or unextended position and preventing vehicle theft is

disclosed. The invention comprises a base member for a placement on the floorboard of a vehicle beneath a brake or clutch pedal; a U-shaped housing extending downward and having a first arm attached to the base and having a second shorter arm defining a gap for receipt of a brake or clutch pedal shaft, said space between the first and second arms defining a slot for receiving the brake or clutch pedal shaft and permitting its full extension upward through said shaft; and locking means associated with the second arm for locking the underside of the pedal within the slot such that the brake pedal cannot be depressed.

In a more preferred embodiment, the present invention is directed to a device for locking the brake or clutch of a vehicle and preventing its theft comprising: a base member for a placement on the floorboard of a vehicle beneath a brake pedal; a metallic U-shaped housing extending downward and having a first arm attached to the base and having a second shorter arm defining an opening for receiving of a brake pedal shaft, said space between the first and second arms defining a slot for receiving the brake pedal shaft and permitting its full extension upward through said slot, said first arm having a cylindrical opening therethrough; a rod extending through said cylindrical opening and being slidable therewith, said rod having a pin which catches the underside of said brake pedal shaft and pulls it upward in a decompressed position; and locking means for locking the position of the rod and pin such that the that the brake pedal cannot be depressed.

In still a further embodiment, the present invention is directed to a device for locking the brake or clutch of a vehicle and preventing its theft comprising: a base member for a placement on the floorboard of a vehicle beneath a brake pedal; a steel U-shaped housing extending downward and having a first arm attached to the base and having a second shorter arm defining an opening for receiving of a brake pedal shaft, said space between the first and

second arms defining a slot for receiving the brake pedal shaft and permitting its full extension upward through said slot, said first arm having a cylindrical opening extending therethrough and collinearly with said slot; a serrated rod extending through said cylindrical opening and being slidable therewith, said rod having a pin at a first end for catching the underside of said brake pedal shaft and a handle at a second end for pulling it upward in a decompressed position; and locking means adapted to lock the serrated rod for locking the position of the rod and pin such that the that the brake or clutch pedal cannot be depressed.

### **Brief Description of the Figures**

Figure 1 is an elevational view of the brake anti-theft device of the present invention.

Figure 2 is an elevational view of the handle and lock pin utilized with the brake lock mechanism of the brake anti-theft device of the present invention.

Figure 3 is an elevational view of the brake or clutch locking anti-theft device of the present invention in an inactive position.

Figure 4 is an elevational view of the brake or clutch locking anti-theft device of the present invention in an activated state.

Figure 5 is a side perspective view of an alternative embodiment of the brake or clutch locking anti-theft device of the present invention.

Figure 6 is a perspective view of the alternative embodiment of the brake locking anti-theft device of the present invention along line 6-6 of Figure 5.

Figure 7 is a perspective view of yet an additional base embodiment for use in the present invention.

Figure 8 - 8B are a second alternative embodiment of the brake or clutch locking anti-theft device.



### **Detailed Description of the Preferred Embodiment**

The brake anti-theft device of the present invention is now described with reference to the enclosed Figures wherein the same numbers are utilized where applicable. In general, the present invention is a device specifically designed to lock the brake or clutch pedal of a motor vehicle in an up or non-depressed state.

Because since 1990, many vehicles manufactured for sale in North American cannot start without the depression of the brake pedal, the invention is specifically designed to prevent the pedal or clutch from being depressed thus thereby disabling the vehicle and preventing its theft and use. This feature is referred to as the brake pedal shift interlock or BPSI in automatic transmission vehicles. Many non-automatic transmission or so-called "standard vehicles" have a similar feature called the clutch pedal start interlock or CPSI, which requires the suppression of the clutch pedal to start the vehicle. The present invention is applicable to both types of vehicles.

A particular feature of the present invention is that it is intended to be utilized by the driver or operator from the comfort of the driver's seat of the vehicle without any need for the driver to get down on his hands or knees or crouch in order to place or adjust the system. While the present invention will be described in the context of a conventional automobile, it is to be appreciated that the teachings of the present invention are equally applicable to all manner of vehicles having brake pedal arms or shafts or clutches including sports utility vehicles, vans, pick-up trucks and trucks.

For purposes of explanation the present invention is now described in the context of a device which locks a brake pedal in an upward position, thus, for example, disabling the BPSI of the vehicle. Referring now to Figures 1 to 4, the brake or clutch lock anti-theft device

of the present invention 10 comprises a base 12 which is placed on the floor of the vehicle adjacent to the brake pedal and shaft 13. The base 12 thereby is placed flush to the floorboard of the vehicle directly below the brake pedal and pedal shaft (arm) 13.

Extending from the base 12 is a U-shaped steel housing 14 which extends downward.

5 The U-shaped housing comprises two legs 16, 18. One leg 16 of the U-shaped housing is shorter than the other 18 thereby defining an opening 20 which extends to a slot 22 defined by the space between the legs of the U-shaped housing. The opening 20 facilitates the placement and removal of the brake pedal shaft 13. In a preferred embodiment, slot 22 should have an approximate width of the steel brake pedal shaft 13 such that the brake pedal  
10 shaft 13 extends through the slot and up to an extended position. In this position, the brake pedal can be depressed freely as it extends downward through said slot 22.

The invention further comprises a locking mechanism 24 associated with a second leg 18 of the U-shaped housing. The second leg 18 of the U-shaped housing 14 includes a cylindrical tube 24 designed to encase a slidable locking pin 26 which is attached to the end  
15 of an extendible rod 28. The rod 28 contains machined lock ratchets or serrations 30 which extend out the tube of the rectangular steel housing to a locking mechanism 32. The second end of the rod 28 comprises a handle 34 which is used to pull the rod upward.

The preferred locking mechanism or means 32 which is utilized in the present invention may be a commercially available key operated steering wheel locking mechanisms.  
20 There are other locking mechanisms suggested by the present invention including combination locks. Locking mechanism or means 32 locks the machine locked ratchets 30 at the appropriate point. As shown most clearly in Figure 4, as the rod 28 extends upward, the pin 26 enters the slot 22, pulls up (Arrow A) and secures the bottom of the brake pedal shaft

13 in an upward or unextended position so that it cannot be depressed. In this position, after being locked into place by pin 26, the brake pedal shaft cannot be depressed. Because the pedal cannot be depressed, the car cannot be placed in gear in vehicles containing BPSI and cannot activate the brake to stop the vehicle.

5           An alternative embodiment of the present invention is shown in Figures 5 and 6. As shown in Figure 5, the base 12 and bottom of leg 16 are beveled at 45 degree angles so that the brake pedal shaft 13 can more easily be guided into and out of the slot 22 when the device is place on and removed from the brake pedal shaft 13.

10           This embodiment further incorporates a means 36 for enabling the driver to press the device into the floorboard or carpet of the vehicle. In a preferred embodiment, means 36 comprises a foot rest 36 which extends horizontally from the top of leg 16. This extension 36 provides a sufficient surface area 38 for the foot of an operator to press downward and my include a gripping top surface. This embodiment further incorporates studs 40 which extend downward from the base 12 and which facilitate the positioning of the device against a  
15           carpeted floor. The studs 40 prevent the device from moving with respect to the floor. As shown in Figure 7, the device may also incorporate cleats 42 which are cut into the bottom of the base 12. Finally, as also shown in Figure 7, this embodiment incorporates a triangular base design in which the legs go to the left, right and straight back. The triangular base design provides maximum support and strength in operation and use.

20           The operation of the present invention is now described with reference to the enclosed Figures and most particularly Figures 3 through 6. The driver or operator desiring to utilize the device 10 will unlock the device and lower the pin 26 all the way down to the base 12 via the handle. The base 12 will then be placed on the floor board 35 under the brake and shaft

13. The brake pedal shaft will then extend through the opening 20 in the U-shaped housing and into the slot 22 with the base positioned squarely on the floor board of the vehicle. The operator will then pull up the handle 34 (Arrow B) thus raising the locking pin 26 upward into the slot 22 and securing the base pedal 13 at its bottom in an upward position. As shown  
5 in the alternative embodiment of Figures 5 and 6, the operator can place his foot on extension 36 to maximize the downward thrust of the device against the floor board of the vehicle. Studs 40 secure the device against the floorboard or carpet. The vehicle operator will then lock the device in this position using the lock mechanism such that the brake pedal cannot be depressed, thereby disabling the operation of the vehicle.

10           Figures 8 - 8B illustrate another alternative embodiment of the present invention. In this embodiment, the legs 16, 18 are of substantially equal length and form the base 12 of the device. The legs 16, 18 are open at the bottom and form an opening 20 which slides on top of the brake pedal to the slot 22. The locking pin 26 is pulled upward thereby locking the brake in an upward position as in the other embodiments described herein. This embodiment  
15 further includes two rotatable feet 42 which are attached to the bottom of legs 16, 18 and which facilitates the pivotable support and positioning of the device. The main attribute of this embodiment is to facilitate ease of placement of the device.

It is to be appreciated by those skilled in the art that the device of the present invention may include a protective outer coating composed of vinyl, PTFE, rubber or plastic.

20           The present invention has been described in the context of locking the brake of a vehicle. In standard transmission vehicles, the device will be affixed to the clutch of the vehicle in the discussed above. Because the clutch is then locked in an upward position and cannot be depressed, the vehicle cannot be started. Accordingly, the teachings of the present

invention are equally applicable to affixation to a clutch in a standard transmission vehicle.

The present invention has been described with reference to a preferred embodiment. It is to be appreciated that other embodiments fulfill the spirit and scope of the present invention and that the true nature and scope of the present invention is to be determined with  
5 reference to the claims appended hereto.

### Claims

1. A device for locking the pedal of a vehicle and preventing its theft comprising:  
a base member for a placement on the floorboard of a vehicle beneath a pedal and  
pedal shaft;

5 a U-shaped housing extending downward and having a first arm attached to the base  
and having a second shorter arm defining a gap for receipt of the pedal shaft, said space  
between the first and second arms defining a slot for receiving the pedal shaft and permitting  
its full extension upward through said slot; and

a locking mechanism associated with the second arm for locking the underside of the  
10 pedal shaft within the slot such that the pedal shaft cannot be depressed.

2. The device of claim 1 wherein said locking means is activated by a key.

3. The device of claim 1 wherein said locking means is activated by a  
combination.

4. The device of claim 1 wherein said pedal shaft is a brake pedal.

15 5. The device of claim 1 wherein said pedal shaft is a clutch pedal.

6. A device for locking the brake or clutch of a vehicle and preventing its theft  
comprising:

a base member for a placement on the floorboard of a vehicle beneath a brake or  
clutch pedal and a brake or clutch shaft;

20 a metallic U-shaped housing extending downward and having a first arm attached to  
the base and having a second shorter arm defining an opening for receiving of the brake or  
clutch pedal shaft, said space between the first and second arms defining a slot for receiving  
the brake or clutch pedal shaft and permitting its full extension both upward and downward

through said slot, said first arm having a cylindrical opening therethrough;

a rod extending through said cylindrical opening and being slidable therewith, said rod having a pin which catches the underside of said brake or clutch pedal shaft within the slot and pulls it upward in a decompressed position; and

5 a locking mechanism for locking the position of the rod and pin such that the that the brake or clutch pedal cannot be depressed.

7. The device of claim 6 wherein said locking means is activated by a key.

8. The device of claim 7 wherein said locking means is activated by a combination.

10 9. A device for locking the brake and brake pedal of a vehicle and preventing its theft comprising:

a base member for a placement on the floorboard of a vehicle beneath a brake pedal;

a stainless steel U-shaped housing extending downward and having a first arm attached to the base and having a second shorter arm defining an opening for receiving of a  
15 brake pedal shaft, said space between the first and second arms defining a slot for receiving the brake pedal shaft and permitting its full extension both upward and downward through said slot, said first arm having a cylindrical opening extending therethrough and collinearly with said slot;

a serrated rod extending through said cylindrical opening and being slidable therewith,  
20 said rod having a pin at a first end for catching the underside of said brake pedal shaft within the slot and a handle at a second end for pulling it upward in a decompressed position; and

a locking mechanism adapted to lock the serrated rod for and pin in position such that the that the brake pedal cannot be depressed.

10. The device of claim 9 further comprising extension means for facilitating the compression of the device by the foot of an operators against the floorboard of a vehicle.

11. The device of claim 9 further comprising studs for securing the base against the floorboard of a vehicle.

5 12. The device of claim 9 wherein said base is triangular in shape.

13. A device for locking the brake of a vehicle and preventing its theft comprising:  
a base member for a placement on the floorboard of a vehicle beneath a brake pedal;  
a stainless steel U-shaped housing extending downward and having a first arm  
attached to the base and having a second shorter arm defining an opening for receiving a  
10 brake pedal shaft, said space between the first and second arms defining a slot for receiving  
the brake pedal shaft and permitting its full extension both upward and downward through  
said slot, said first arm having a cylindrical opening extending therethrough and collinearly  
with said slot, said base and said second shorter arms further having matable beveled surfaces  
to facilitate the ease of positioning of said brake pedal in said opening ;

15 a serrated rod extending through said cylindrical opening and being slidable therewith,  
said rod having a pin at a first end for catching the underside of said brake pedal shaft within  
the slot and a handle at a second end for pulling it upward in a decompressed position; and  
a locking mechanism adapted to lock the serrated rod for and pin in position such that  
the that the brake pedal cannot be depressed.

20 14. A device for locking the brake of a vehicle and preventing its theft comprising:  
a stainless steel U-shaped housing extending downward and having a first arm and a  
second arm defining an opening for receiving of a brake pedal shaft, said space between the  
first and second arms further defining a slot for receiving the brake pedal shaft and permitting



its full extension both upward and downward through said slot, said first arm having a cylindrical opening extending therethrough and collinearly with said slot;

a serrated rod extending through said cylindrical opening and being slidable therewith, said rod having a pin at a first end for catching the underside of said brake pedal shaft within  
5 the slot and a handle at a second end for pulling it upward in a decompressed position; and

a locking mechanism adapted to lock the serrated rod for and pin in position such that the that the brake pedal cannot be depressed.

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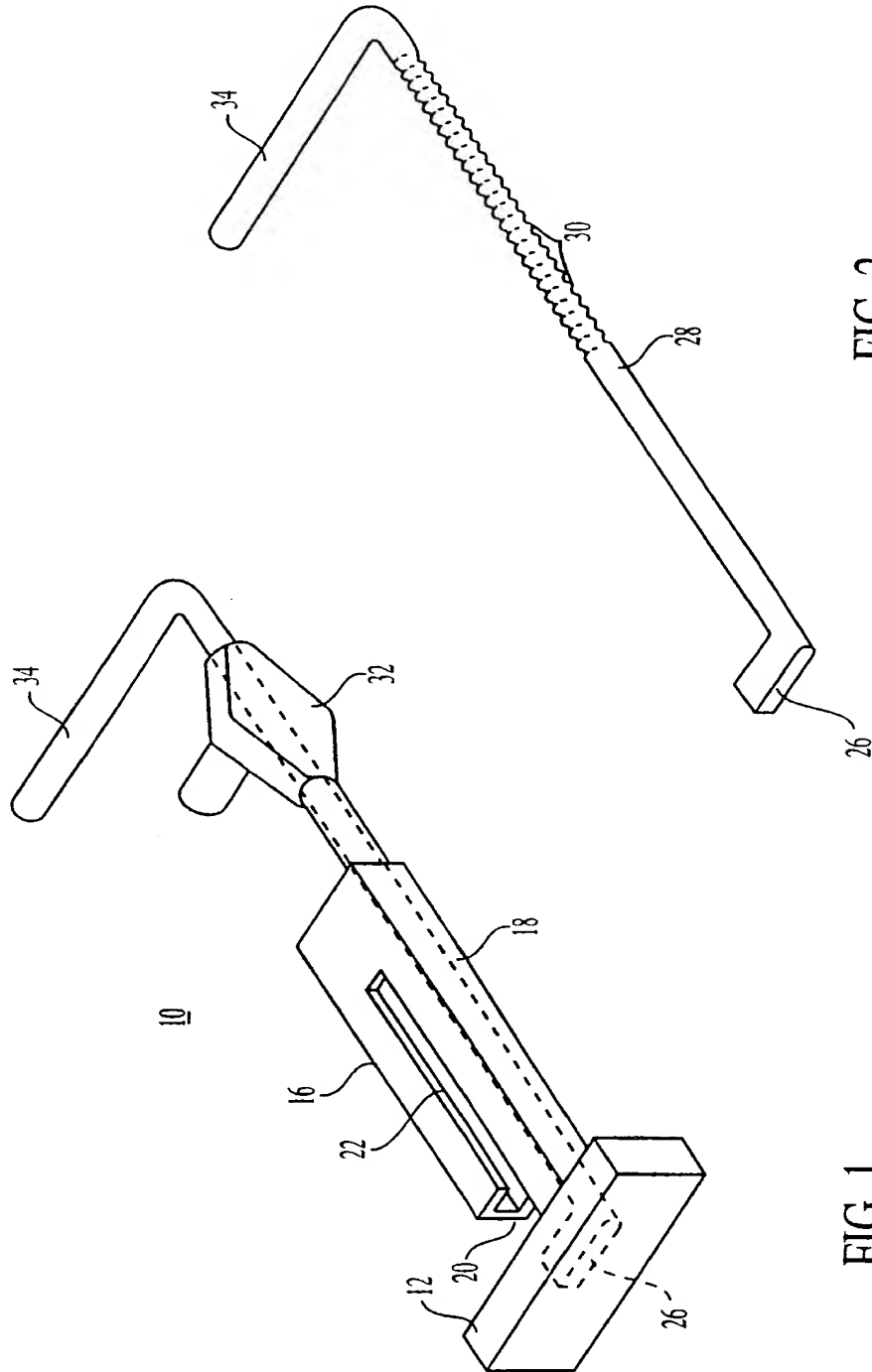


FIG. 2

FIG. 1

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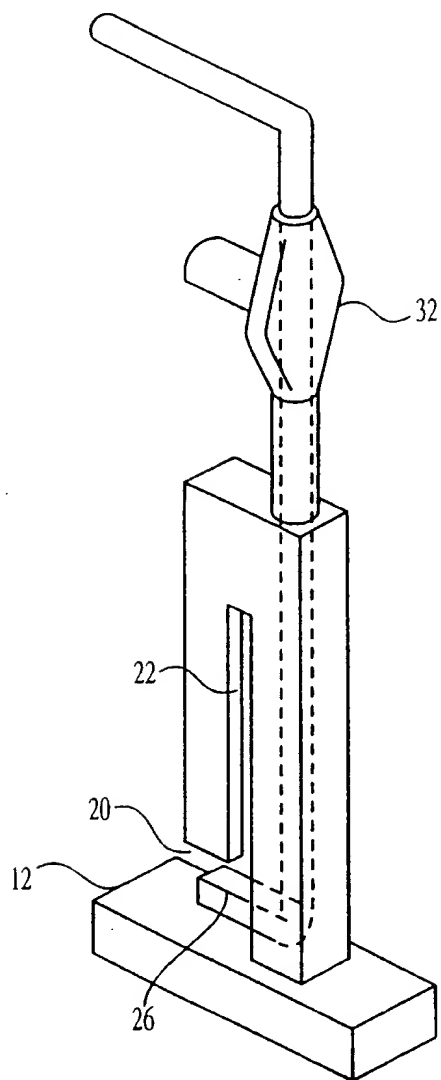


FIG. 3

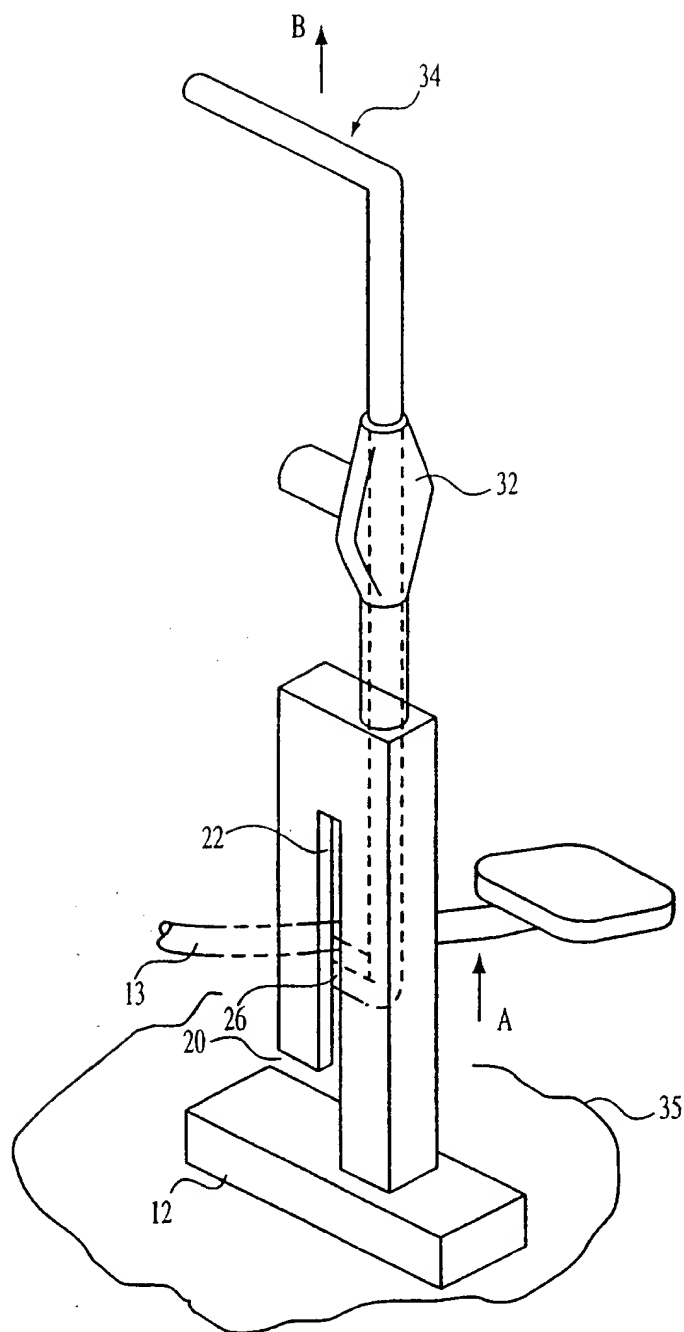


FIG. 4

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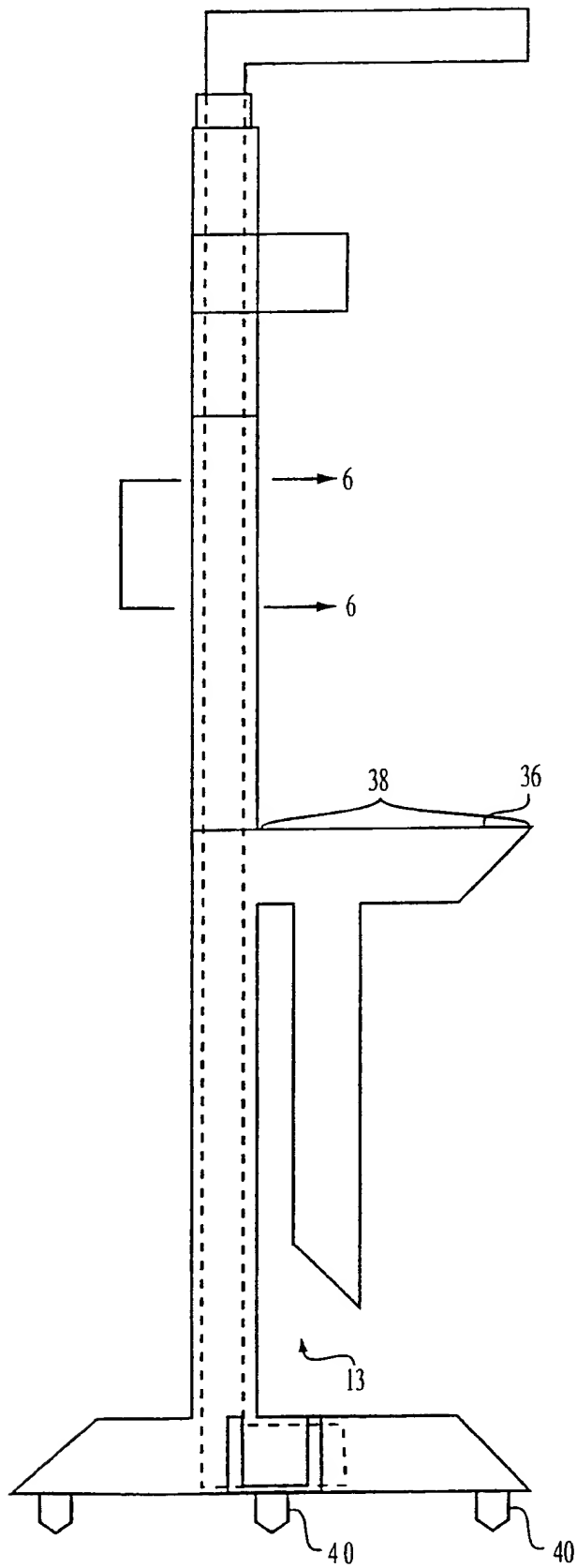


FIG. 5

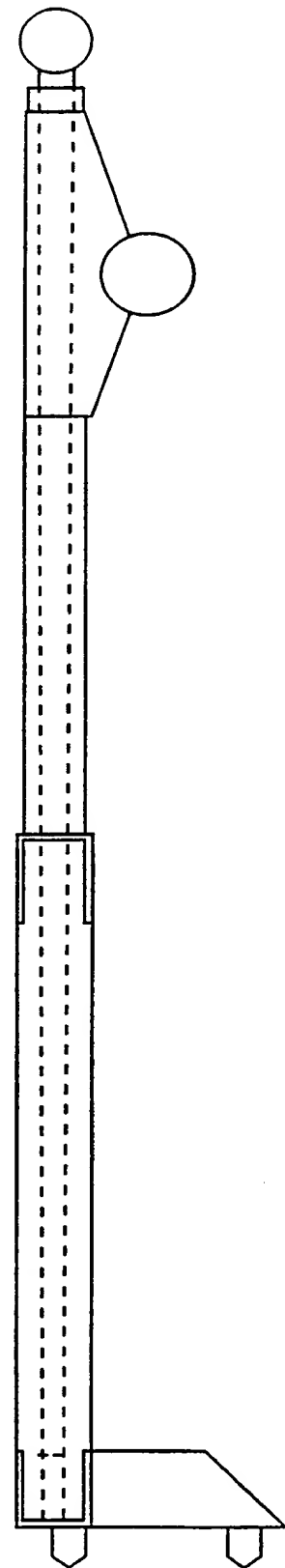


FIG. 6

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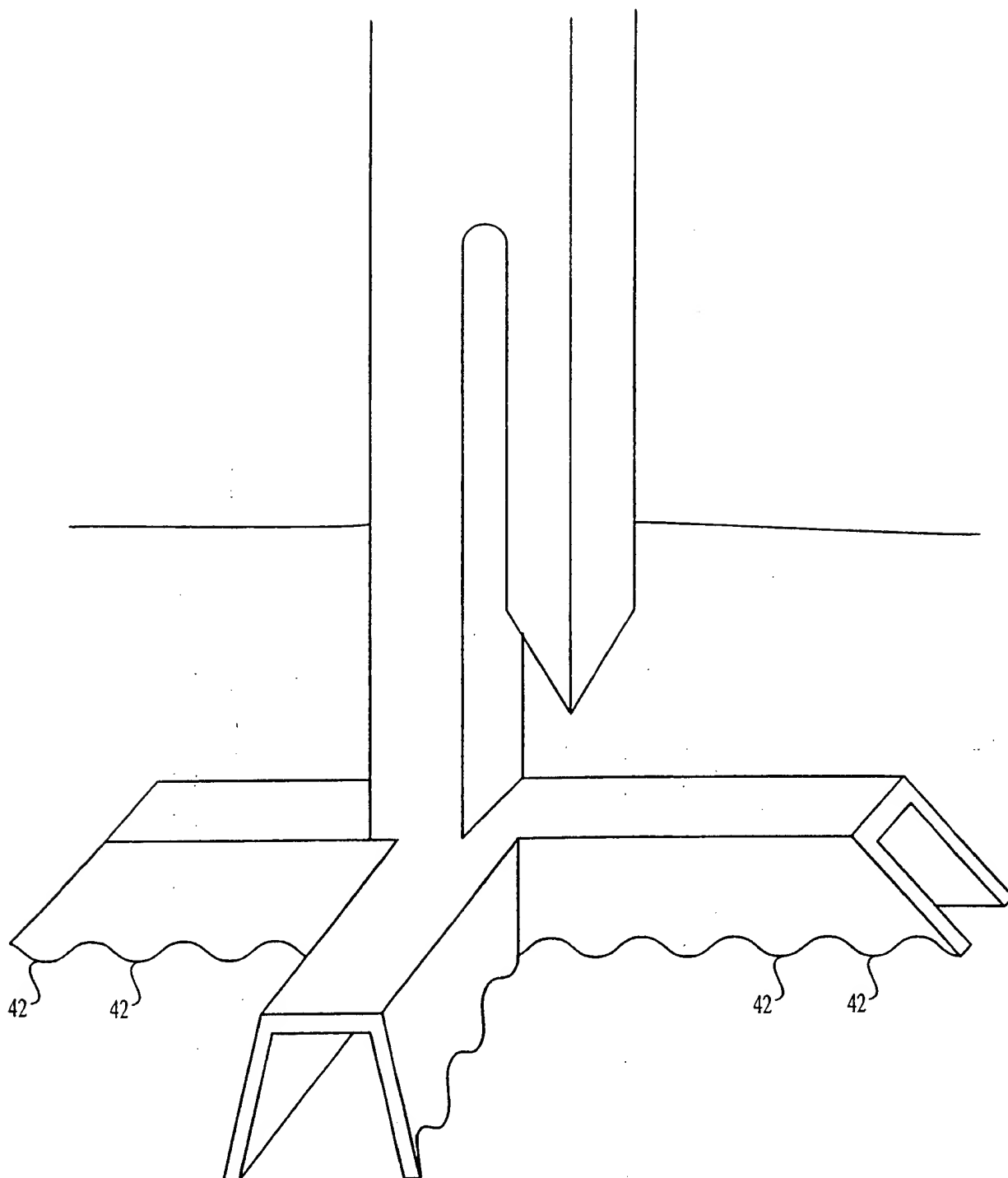


FIG. 7

SUBSTITUTE SHEET (RULE 26)

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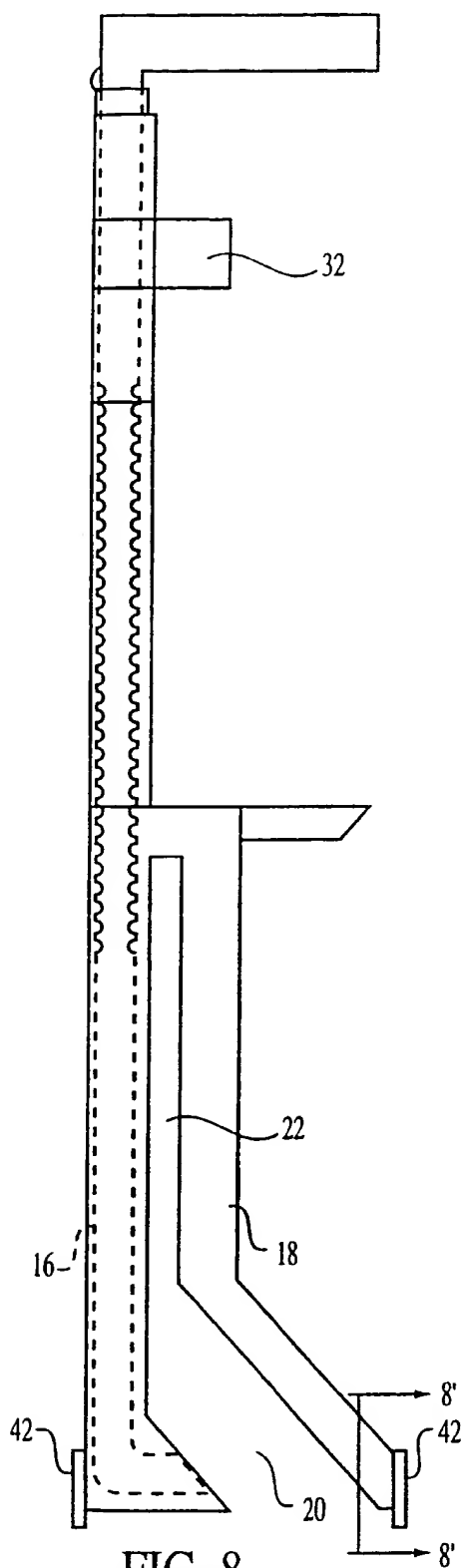


FIG. 8

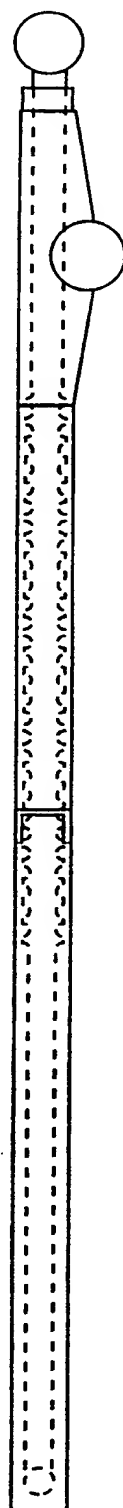
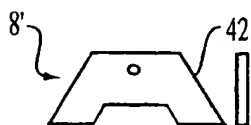


FIG. 8A

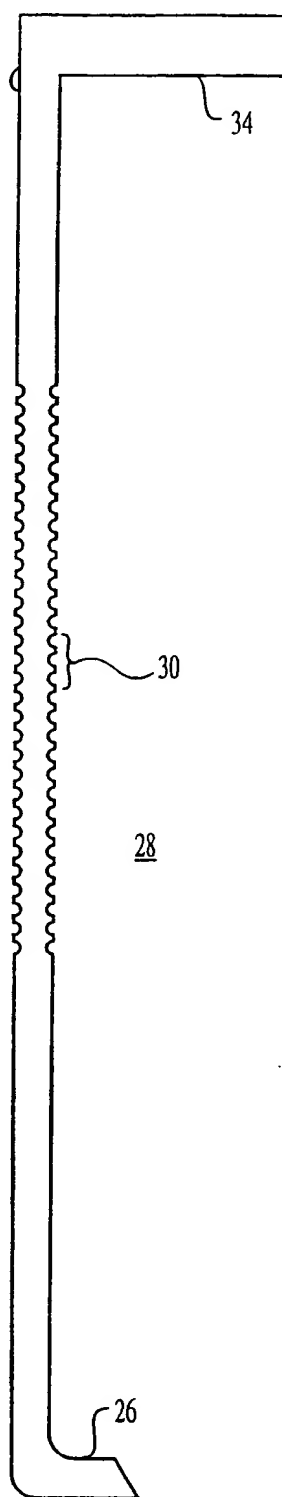


FIG. 8B

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/12521

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : F16H 57/00

US CL : 70/202

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 70/198-204,209,237,238

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| X, P      | US 5,715,710 A (DE LUCIA et al) 10 February 1998 (10.02.98), see entire document.  | 1-14                  |
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

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